CLAIMS

What is claimed is:

1. Torsional vibration damper in the bridging clutch of a hydrodynamic clutch arrangement having an axis of rotation, a clutch housing, a turbine wheel, and a takeoff-side component, the torsional vibration damper comprising:

a drive-side connecting device comprising a drive-side transmission element which can be connected to the clutch housing;

a takeoff-side connecting device comprising a take-off side transmission element which can be connected to the takeoff-side component;

an intermediate transmission element having an actuation point located operatively between said connecting devices;

first energy storage devices connecting said intermediate transmission element to said drive-side connecting device;

second energy storage devices connecting said intermediate transmission element to said takeoff-side connecting device; and

a mass element fixed to said actuation point.

2. Torsional vibration damper according to Claim 1, wherein the mass element is comprises the turbine wheel.

3. Torsional vibration damper according to Claim 2 wherein the mass element comprises an supplemental mass in addition to the turbine wheel.

4. Torsional vibration damper according to Claim 3, wherein the

supplemental mass is provided on the turbine wheel .

5. Torsional vibration damper according to Claim 3, wherein the turbine wheel has a radially outer area to which the supplemental mass is fixed.

6. Torsional vibration damper according to Claim 2, further comprising a tie element connecting the intermediate transmission element to the turbine wheel , said tie element spacing the mass element from the actuation point.

7. Torsional vibration damper according to Claim 1, wherein the first energy-storage devices are radially offset from the second energy-storage devices with respect to the axis of rotation, the intermediate transmission element comprising a first cover plate having radially offset driver elements for the energy-storage devices.

8. Torsional vibration damper according to Claim 7, further comprising a second cover plate attached nonrotatably to the first cover plate, said second cover plate having radially offset driver elements for the energy-storage devices, said drive-side transmission element and said takeoff-side transmission element being received axially between said first and second cover plates.

9. Torsional vibration damper according to Claim 1, wherein the first energy-storage devices and the second energy-storage devices are essentially the same radial distance away from the axis of rotation but are circumferentially offset from each other, the intermediate transmission element comprising a control plate having drive projections which engage circumferentially between the first energy-storage

devices and the second energy-storage devices, the mass element being attached to the control plate.

10. Torsional vibration damper according to Claim 9, wherein the turbine wheel comprises a turbine wheel shell, the control plate being formed on the turbine wheel shell.

11. Torsional vibration damper according to Claim 9, wherein the takeoff-side transmission element comprises a cover plate having openings, each said drive projection passing through a respective said opening to bridge the gap between the energy-storage devices and the turbine wheel with freedom of relative movement in the circumferential direction.

12. Torsional vibration damper according to Claim 1, wherein the drive-side transmission element is connected for rotation in common to a component of the bridging clutch.

13. Torsional vibration damper according to Claim 1, wherein the drive-side transmission element is formed as an integral part of a piston of the bridging clutch.

14. Torsional vibration damper according to Claim 1, further comprising a rotational angle limiter which limits the amount by which the drive-side transmission element can rotate with respect to the intermediate transmission element.

15. Torsional vibration damper according to Claim 14, further

comprising a tie element connecting the intermediate transmission element to the turbine wheel, the rotational angle limiter comprising a pin by which the tie element for the turbine wheel is attached.

16. Torsional vibration damper according to Claim 14, wherein the rotational angle limiter comprises a securing element attached nonrotatably to the drive-side transmission element and an opposing securing element on the intermediate transmission element , said opposing securing element cooperating with the first securing element with freedom of relative rotation in the circumferential direction.

17. Torsional vibration damper according to Claim 16, wherein both the securing element and the drive-side transmission element are provided on a driver plate connected nonrotatably to the piston of the bridging clutch.

18. Torsional vibration damper according to Claim 8 further comprising a driver element by which the second cover plate acts on the energy-storage device of the takeoff-side connecting device, the second cover plate with the driver element being provided on the radially inner end of the turbine wheel shell.

19. Torsional vibration damper according to Claim 1 wherein the turbine wheel comprises a turbine wheel shell, the turbine wheel being centered on the second energy-storage devices by the radially inner end of the turbine wheel shell.

20. Torsional vibration damper according to Claim 1, wherein the turbine wheel is attached directly to the intermediate transmission element at the actuation point.

21. Torsional vibration damper according to Claim 20, wherein the turbine wheel is welded to the actuation point.

22. Torsional vibration damper according to Claim 21, wherein the turbine wheel can rotate freely relative to a turbine wheel hub.

23. Torsional vibration damper according to Claim 22, wherein the turbine wheel comprises a base mounted on the turbine wheel hub.

24. Torsional vibration damper according to claim 1, further comprising a turbine wheel hub connected for rotation in common to the takeoff-side component of the hydrodynamic clutch arrangement, the takeoff-side transmission element being connected nonrotatably to a turbine wheel hub.

25. Torsional vibration damper according to Claim 1, wherein the mass element comprises a supplemental mass, which is independent of the turbine wheel.

26. Torsional vibration damper according to Claim 25, further comprising a tie element which attaches the supplemental mass to the intermediate transmission element, said tie element extending in the radial direction.

27. Torsional vibration damper according to Claim 26, wherein the tie element is a carrier for the supplemental mass and holds this mass into a radially outer area of the turbine wheel.

28. Torsional vibration damper according to Claim 27, wherein the carrier for the supplemental mass has elasticity in the axial direction.

29. Torsional vibration damper according to Claim 1, wherein the turbine wheel comprises a turbine wheel shell having a bent radially outer edge which acts as a supplemental mass.

30. Torsional vibration damper according to Claim 1 further comprising a first rotational angle limiter provided operatively between the drive-side transmission element and the intermediate transmission element, and a second rotational angle limiter provided operatively between the intermediate transmission element and the takeoff-side transmission element, the second rotational angle limiter being operatively independent of the first rotational angle limiter.

31. Torsional vibration damper according to Claim 1, further comprising a first rotational angle limiter provided operatively between the drive-side transmission element and the intermediate transmission element, and a second rotational angle limiter provided operatively between the drive-side transmission element and the takeoff-side transmission element, where the second rotational angle limiter defines the total relative angle of rotation.

32. Torsional vibration damper according to Claim 1, further comprising a retaining bracket attached nonrotatably to at least one plate located axially between a piston of the bridging clutch and a housing cover of the clutch housing.

33. Torsional vibration damper according to Claim 32, wherein the retaining bracket has teeth which engage the at least one plate so that the plate cannot rotate but can shift in the axial direction.

34. Torsional vibration damper according to Claim 32, wherein the plate has at least one axial side provided with a friction lining.

35. Torsional vibration damper according to Claim 32, wherein the retaining bracket has teeth connected to the teeth of at least two plates so that the plates cannot rotate relative to the bracket but can shift in the axial direction; said vibration damper further comprising an intermediate plate provided axially between each pair of plates, the intermediate plate having teeth which engage nonrotatably in a corresponding set of teeth on an anti-rotation device.

36. Torsional vibration damper according to Claim 35, wherein the anti-rotation device is attached nonrotatably to a housing cover of the clutch housing.